

Air & Noise

Noise – Overview

Applicability
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APPLICABILITY

A Noise Impact Assessment or Noise Screening Assessment will be completed for every federal-aid highway project in the state of Georgia authorized under title 23 United States Code. This includes federal-aid projects that are administered by GDOT, local public agencies, and roadways operated by others on behalf of the state of Georgia.

In accordance with 772.15, federal funds may be used for noise abatement measures when traffic noise impacts have been identified and abatement measures have been determined to be feasible and reasonable pursuant to 772.13(d).

Additionally, noise impacts must be assessed for Georgia and National Register-eligible historic properties potentially impacted by state-funded projects.

REGULATIONS, GUIDANCE AND POLICY

A noise analysis shall be conducted in compliance with the following:

- > *Title 23 of the Code of Federal Regulation, Part 772—Procedures for the Abatement of Highway Traffic Noise and Construction Noise;*
- > *The National Environmental Policy Act (NEPA) of 1969 as amended;*
- > The US Department of Transportation, Federal Highway Administration's (FHWA) *Highway Traffic Noise: Analysis and Abatement Guidance* (FHWA, Jan. 2011);
- > *Measurement of Highway-Related Noise* (FHWA, May 1996);
- > *Federal Highway Administration's Traffic Noise Model* (FHWA TNM), User's Guide (Version 2.5 Addendum) Final Report April 2004;
- > Federal Highway Administration's 23 CFR 772 *Final Rule and NEPA Reevaluations;*
- > Georgia Department of Transportation *Highway Noise Abatement Policy for Federal-Aid Projects;*

- > Georgia Department of Transportation *Noise Barrier Policy – Material Type Requirements*, April 18, 2017; and
- > Georgia Department of Transportation *State-funded Projects: Historic Property Noise Policy*, March 22, 2018.

FEDERAL-AID NOISE ABATEMENT POLICY

It is GDOT policy to comply with federal regulations 23 CFR 772 *Procedures for Abatement of Highway Traffic Noise and Construction Noise* for all new highway or multimodal construction projects that require FHWA approval or are funded with federal-aid funds. In coordination with FHWA, GDOT set forth the guidance used to identify highway noise impacts and abatement measures in compliance with 23 CFR 772:

Highway Noise Abatement Policy for Federal-Aid Projects

Georgia Department of
Transportation, February 2018

The policy describes the projects that warrant noise analysis, the analysis and abatement criteria adopted by GDOT, and the method of traffic noise prediction. These requirements are summarized below. Noise Specialists should refer to the policy itself for details.

Project Classifications

The federal rule 23 CFR 772 defines three project categories which are used to decide whether noise abatement should be considered in a formal study. They are Type I, Type II, or Type III.

Type I Project

Only Type I projects are considered for noise analysis and abatement. If any segment or component of an alternative meets the definition of a Type I project, then the entire alternative is considered to be Type I.

A Type I project is defined as follows:

1. The construction of a highway on new location; or,
2. The physical alteration of an existing highway where there is either:
 - i. Substantial Horizontal Alteration: A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,

- ii. Substantial Vertical Alteration: A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
- 3. The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a (high occupancy vehicle lane, high occupancy toll lane, bus lane, or truck climbing lane); or,
- 4. The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
- 5. The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
- 6. Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
- 7. The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

Type II Project

A federal or federal-aid highway project for noise abatement on an existing highway. GDOT does not have a policy of abating noise on existing highways, and therefore does not have a program for Type II projects.

Type III Project

A federal or federal-aid highway project that does not meet the classifications of a Type I or Type II project. Because noise impacts from Type III projects are expected to be negligible, these projects do not require the preparation of a noise study or abatement of highway noise impacts.

Adopted Criteria

Federal regulations 23 CFR 772 require that each state adopt certain criteria when assessing noise sensitive areas for potential noise abatement. GDOT adopted the following criteria in accordance with 23 CFR:

- > 772.11 (c)(2) – Each separate structure of frequent human use within an activity category will be considered a noise receptor. For cemeteries, parks, and other Category C activities, the number of receptors will be defined based on an equivalent number of residences of a lot size typical of the surrounding community (see Table 1: Noise Abatement Criteria). For example, if the nearby residential community's average lot size is one acre with a highway frontage of 150 feet, the highway frontage area of a public park would be "divided" into similar frontages and lot sizes in order to determine the number of receptors.

- > 772.11 (e) – The approach level to be used when determining a traffic noise impact will be 1 dB(A) less than the Noise Abatement Criteria for Activity Categories A to E (see Table 1).
- > 772.11 (f) – A substantial noise increase is defined as a 15 dB(A) or more increase over existing noise levels, in the design year build condition.
- > 772.13 (c) (2) – Absorptive treatments in noise barriers will only be considered: 1) when parallel noise barriers are proposed with a distance to height ratio of less than 10:1; or, 2) when there are neighborhoods, impacted by noise, directly opposite of the roadway where abatement is not reasonable for one of the neighborhoods; or, 3) in consultation with FHWA.
- > 772.13 (d) (1) (i) – A minimum of 1 impacted receptor must achieve a 5 dB(A) reduction before a noise barrier will be considered feasible.
- > 772.13 (d) (1) (ii) – A noise barrier is not considered feasible if it must be greater than 30 feet in height, would pose a safety hazard, or does not allow sufficient access to properties.
- > 772.13 (d) (2) (i) - The decision to provide abatement will be made in collaboration with the property owners and residents, including tenants, of a benefitted receptor(s). The outreach strategy will be customized for maximum effectiveness on each project. Outreach methods may consist of a first class mailed letter and survey provided to benefitted property owners and tenants, public meetings, phone conversations, or any other method based on the project circumstances. A good faith effort to reach benefitted receptors will be made. If there are no or minimal responses (less than 25 percent) then the outreach method utilized will be reviewed to determine if another method would result in increased participation. A noise barrier will only be constructed if at a minimum 50% plus one of the respondents vote in favor of noise abatement. Both property owners and dwellers get a vote and their vote must be returned within 30 calendar days to receive consideration. Property owners will receive one vote per unit owned and an additional vote if they reside in the unit, and tenants will receive one vote for the benefitted unit they occupy. For some projects, individual meetings, community meetings or other outreach efforts may also be utilized to determine a majority consensus.

The final noise abatement measures cannot be determined until the design plans have sufficiently progressed to a point where the barrier analysis can be conducted; after which, the outreach above can be completed. GDOT will strive for a decision on abatement as soon as possible after this information is available, but no later than the final environmental document that is required for construction authorization.

- > 772.13 (d) (2) (ii) – In order to determine cost reasonableness, a noise barrier must cost \$55,000 or less per benefitted receptor. A \$25 per square foot unit construction cost (post and panels) shall be used when determining cost reasonableness.

- > 772.13 (d) (2) (iii) – A 7 dB(A) reduction is the GDOT design goal for a benefitted receptor.
- > 772.13 (d) (2) (iii) – At least one of the benefitted receptors must meet the design goal of 7 dB(A).
- > 772.13 (e) – In order to be defined as a benefitted receptor, a noise reduction of 5 dB(A) or more must be realized.

Table 1 – Noise Abatement Criteria

Activity Category	Activity Leq(h)	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	Exterior	Residential
C	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F
F	-	-	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	-	-	Undeveloped lands that are not permitted

[Hourly A-Weighted Sound Level decibels, dB(A)]

Traffic Noise Prediction

Following 23 CFR 772.9, the noise analysis will be conducted with the current version of the FHWA Traffic Noise Model (TNM). It will be developed following the *TNM User Guide* and with reference to *FHWA's Measurement of Highway-related Noise Guidance* (June 2010, Revised Jan 2011) as needed. TNM roadway elements should be modeled following *TNM Version 2.5 Release Notes* and *FHWA TNM FAQs*. Other requirements include:

- > The noise model should address existing conditions, design year build conditions, and design year no-build conditions. Design year build conditions should be predicted for all build alternatives retained for consideration through the NEPA process. Noise Specialists should coordinate with FHWA concerning Tier 1 Environmental Impact Statements to determine scope and methodology early in the planning process;
- > FHWA guidance requires the use of sound level meters be ANSI S1.4-1983, Type II or better, with a valid certificate of calibration;
- > Noise Specialists will give priority to exterior areas with frequent human use to determine the location and number of noise sensitive receptors;
- > Average pavement type will be used for the future noise predictions in TNM. Specific pavement types may be used to model existing noise conditions when field validations confirm accuracy;
- > Noise contour lines may be used to screen alternative layouts for noise but not to assess impacts to receptors;
- > A TNM receiver may be identified with a single label to represent multiple receptors sharing a common noise environment;
- > TNM must be used to determine existing noise levels (except on new location) and predicted design year noise levels must be based on traffic characteristics yielding the *worst* hourly traffic noise levels. The Noise Specialist must consider factors such as peak hour truck volumes, level of service, design hour volumes, posted speed limits, and “free flow” worst case conditions to determine the worst hourly traffic noise levels. In unique situation, seasonal activities may be a consideration and coordination during concept development should occur to incorporate; and
- > Traffic data must be approved by the GDOT Traffic Analysis Bureau and be consistent with the traffic used in planning and NEPA documents.

STATE-FUNDED HISTORIC PROPERTY NOISE POLICY

The policy for the assessment of highway traffic noise applies to Federal-aid projects. However, noise impacts to historic properties on state-funded projects may be of concern. To address this, GDOT Historians and Noise Specialists developed guidance used to identify and document noise impacts to historic properties:

Georgia State-funded Projects: Historic Property Noise Policy

Georgia Department of
Transportation, March 2018

The policy describes how noise impacts will be documented for historic properties located within a federal jurisdiction or federally-permitted action (i.e. the U.S. Army Corps of Engineers, the Federal Transit Administration, etc.), where 36 CFR Part 800 applies. The policy also describes how noise impacts to historic properties will be documented for state-funded projects subject to Georgia Code Section 12-16-2 (Environmental Policy Act of 2006 referenced in SB 346) and guided by the Noise Control Act (1972).